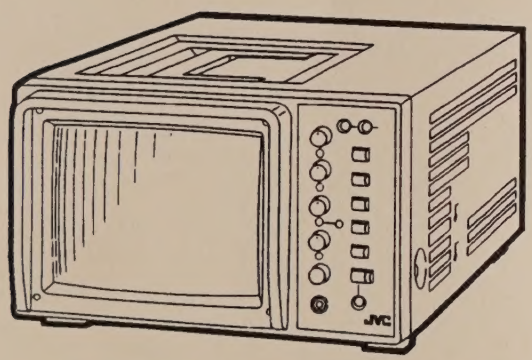
JVC

SERVICE MANUAL

COLOR VIDEO MONITOR

TM-550U



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SPECIFICATIONS

Item	Content	Item	Content
Type	Color video monitor	Input A,B	Video-BNC
Color system	NTSC/PAL system		1VP-P,75ohms,negative sync
CRT	6"(measured diagonally),90°deflection,in-line gun,vertical pitch stripe phosphor of 0.42mm(A14JJD68X)		Bridged connection is possible (A termination switch is provided)
			Audio-RCA pin connector
Audio output	0.5W 8Ω 10% THD		390mVrms,high impedance
Speaker	3-1/8" round ×1		Bridged connection is possible
Screen size(H×V)	4-7/16"×3-5/16"	EXT sync	BNC
Scanning frequency	NTSC(H)15.625kHz,(V)59.94Hz		4VP-P,75ohms,negative sync
	PAL(V)15.625kHz,(V)50Hz		Bridged connection is possible
Horizontal Resolution	More than 250 lines	Weight	10.9lbs(4.9kg)
		Accessories	Power cord (approx 2.4m)×1
Power requirements	AC100 to 120V,50/60Hz		Screen hood ×1
	DC12V		Rear Guard ×1set
Power consumption	AC0.57A,DC2.7A		Inner battery adapter ×1

Design & specification subject to change without notice.

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No.50775
Apr.1993

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SERVICE MANUAL

COLOR VIDEO MONITOR

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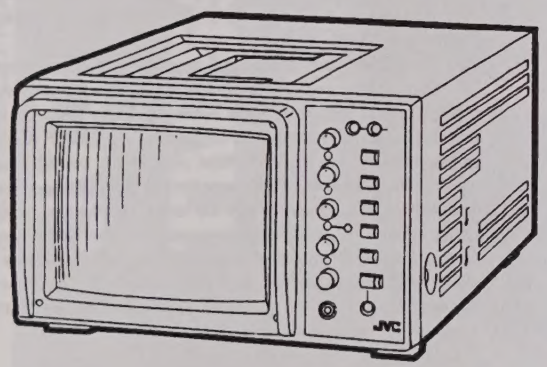

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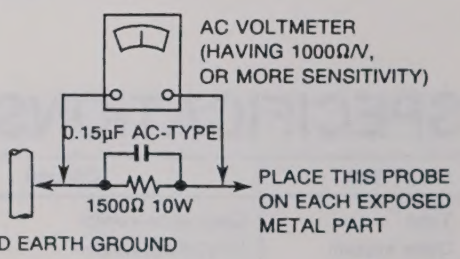
SAFETY PRECAUTIONS

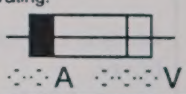
1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection,no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual many create shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contrained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and NEUTRAL side grounding or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (⊥) side GND, the NEUTRAL (⏚) side GND and EARTH (⏚) side GND. Don't short between the LIVE side GND and NEUTRAL side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B_1 setting should be checked or adjusted (See ADJUSTMENT OF B_1 POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approvided by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs,metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
    (1) **Dielectric Strength Test**
    The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.
    (. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
    This method of test requires a test equipment not generally found in the service trade.
    (2) **Leakage Current Check**
    Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
    • Alternate Check Method
    Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item **"How to check the high voltage hold down circuit"**.

■ **ONLY CANADA**

This mark shows a fast operating fuse, the letters indicated below show the rating.



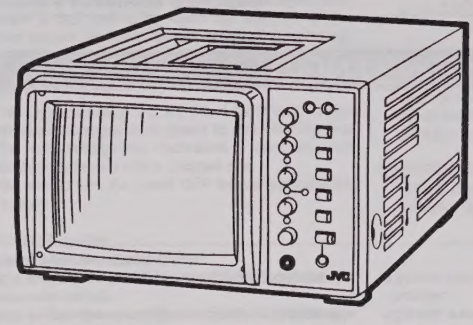
INSTRUCTIONS

JVC

TM-550U

COLOR VIDEO MONITOR

OPERATING INSTRUCTIONS



JVC

JVC PROFESSIONAL PRODUCTS COMPANY
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JVC CANADA INC.
21 Finchdene Square, Scarborough Ontario M1X 1A7

Printed in Japan
TM-550U-IB-A
Ⓐ1

For Customer Use:

Enter below the Serial No. which is located on the bottom of the cabinet. Retain this information for future reference.

Model No. TM-550U

Serial No.

(No.50775) 3

TM-550U

Thank you for purchasing this JVC color video monitor. Please carefully read this instruction manual for proper use.

SAFETY PRECAUTIONS

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION: POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

INFORMATION (FOR CANADA)
THIS PRODUCT COMPLIES WITH D.O.C. LIMITS (C.R.C., C. 1374) PERTAINING TO CLASS A DIGITAL APPARATUS.

RENSEIGNEMENT (POUR CANADA)
CE PRODUIT EST CONFORME AUX NORMES DU M.D.C. (C.R.C., Ch. 1374) S'APPLIQUANT AUX APPAREILS NUMERIQUES DE CLASSE A.

INFORMATION

Caution: Changes or modification not approved by JVC could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FEATURES

- Three types of power source can be selected as required: domestic AC outlets, inner batteries, and outer batteries.
- Battery saving function makes battery duration last longer.
- Built-in charge circuit for optional rechargeable batteries.
- LED indicates when the duration of rechargeable battery becomes almost empty.
- Two sets of video and audio input terminals.
- External sync signal input/output terminals.
- Compatible with NTSC and PAL color systems.
- 6-inch picture tube reproduces bright and clear pictures.
- Space-saving design with convenient carrying handle.
- Screen hood useful to make outdoor viewing easier.

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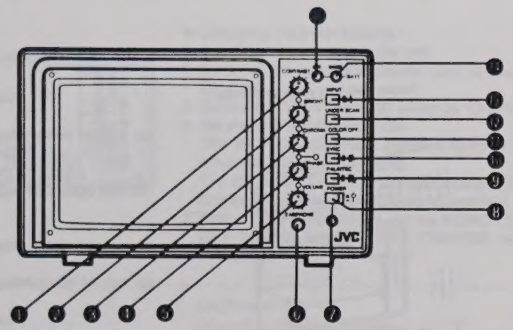
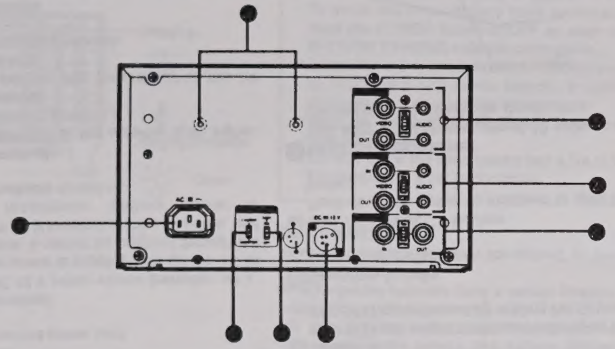
CONTROLS, LOCATIONS, FUNCTIONS

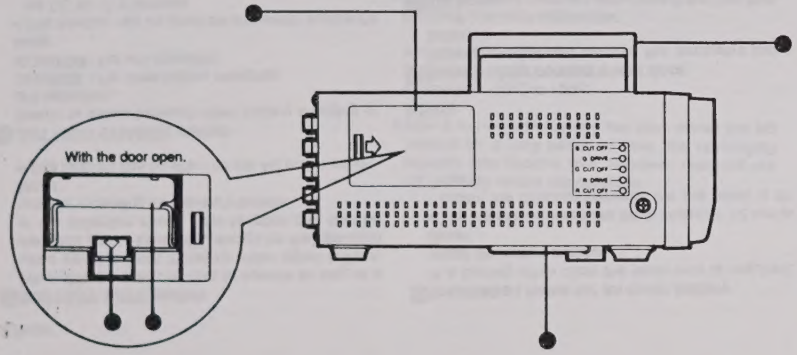
■Front



■Rear



■Side



■Front

❶CONTRAST control
Light ⟷ Strong
Turn to adjust the picture contrast.

❷BRIGHT control
Dark ⟷ Bright
Turn to adjust the picture brightness.

❸CHROMA control
Thin ⟷ Dense
Turn to adjust the color density of the picture.

❹PHASE control
Reddish ⟷ Greenish
Turn to adjust the picture hue. Adjust with reference to skin color. (This control only operates when NTSC signals are input to the unit.)

❺VOLUME control
Decrease ⟷ Increase
Turn to adjust the audio level of the connected earphone or built-in speaker.

❻EARPHONE jack
To connect an optional earphone. No sound is heard from the built-in speaker when in use.

❼POWER indicator
Lights green when the power is ON. If the power is supplied from the inner battery, it changes from green to red, indicating when the duration of the inner battery becomes almost empty. If it turns red, charge the inner battery or replace it with another one.
Notes:
- When using the DC IN 12 V terminal, if the indicator changes from green to red, defining that the input voltage has decreased. If using an outer battery, replace it with a charged one.
- Be sure to turn the power OFF before replacing the battery.

❽POWER button
Press to turn the power ON/OFF.
(▁): The power is OFF; the POWER indicator is turned off.
(‾): The power is ON; the POWER indicator is turned on.

❾PAL/NTSC button
Press to switch the color system (PAL/NTSC), according to the input signal.
(▁): When a PAL signal is input.
(‾): When an NTSC signal is input.

❿SYNC button
Press to select the external sync operation. When performing the external sync operation, input a sync signal to the rear EXT SYNC terminal.
(▁): When operating the unit using the sync signal of the input video signal. (Normally set to this position.)
(‾): When operating the unit using an external sync signal.

⓫COLOR OFF button
Press to obtain monochrome pictures. Use to check white balance, etc.
(▁): Normal color pictures.
(‾): Monochrome pictures.

⓬UNDERSCAN button
Press to change the scanning mode between overscanning and underscanning.
(▁): Overscanning.
( ): Underscanning.

⓭INPUT button
Press to select the video and audio signals input to the INPUT A or INPUT B terminal.
(▁): When selecting the video and audio signals of the component connected to the INPUT A.
(‾): When selecting the video and audio signals of the component connected to the INPUT B.

⓮BATTERY CHARGE indicator
When setting the BATTERY CHARGE switch on the rear of the unit to "CHARGE", it lights. While the inner battery is being charged, it lights red. The indicator turns green when charging is complete.

⓯BATTERY SAVE indicator
When the BATTERY SAVE switch is ON, the indicator lights green. Once in operation, it turns red.

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■Rear

⑯ BATTERY SAVE switch
When ON, the unit continues to operate as long as a video signal is input. When no video signal is input, the unit's power turns OFF, except for the operation of the detection circuit. This function can also be used for extending the battery's lifetime.
Note:
- This function has no effect on the AC power supply.

⑰ BATTERY CHARGE switch
Switch to select between inner battery charging or unit operation.
CHARGE : For inner battery charging.
MONITOR: For unit operation.
Note:
- This function has no effect on any power source via the DC IN 12 V terminal.

⑱ AC IN terminal
Connect the provided power cord.

⑲ DC IN 12 V terminal
Connect to a DC 12 V power source (batteries, etc.).
Caution : When power is supplied through the AC IN terminal, it cannot be supplied through the DC IN 12 V terminal at the same time, and the inner/outer battery power is automatically turned off.

⑳ EXT SYNC terminals
IN and OUT terminals of the external sync signal. (Bridged connection is possible.)
- **Termination switch**

75 Ω : When connecting (inputting) to the IN terminal only.
OPEN: For a bridged connection.

㉑ INPUT B terminals
IN and OUT terminals of the video and audio signals. (Bridged connection is possible.)
- **Termination switch**

75 Ω : When connecting (inputting) to the IN terminal only.
OPEN: For a bridged connection.

㉒ INPUT A terminals
IN and OUT terminals of the video and audio signals. (Bridged connection is possible.)
- **Termination switch**

75 Ω : When connecting (inputting) to the IN terminal only.
OPEN: For a bridged connection.

㉓ Installation holes for an outer battery
If a battery other than the inner one is required, install the battery adapter.
Note:
- The installation holes are M4 in diameter, 12 mm in depth; the distance between the two holes is 60 mm.

■Side

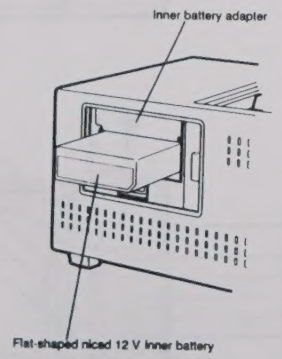
㉔ Inner battery compartment door
Open to install and remove the exclusive inner battery.

㉕ Tilt lever
Set this lever to tilt the unit by approximately 15°.
Cautions:
- Do NOT put weight on the unit with the tilt lever set.
- Do NOT carry the unit by holding the tilt lever.

㉖ Carrying handle
Lift up the handle to carry the unit.

㉗ BATTERY EJECT button
Push down the button as indicated to eject the inner battery.

㉘ Inner battery adapter
Use with a flat-shaped nicad 12 V inner battery. Contact your local dealer for details.



PROVIDING POWER SUPPLY TO THE UNIT

This unit operates with any of the following three types of power source: domestic AC outlets, inner batteries, or outer batteries. By connecting the power cord to one of the power input terminals, the unit automatically selects that power source. Be careful that this selection must be under the following conditions:

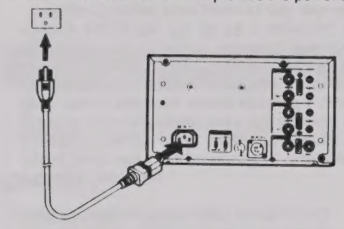
Power source priority table

When using the following power source	Correct connection	
	AC IN terminal	DC IN 12 V terminal
AC outlet	Yes	*Yes/No
Outer battery	No	Yes
Inner battery	No	No

* Even if the DC IN 12 V terminal is connected, AC IN has priority.

■Using an AC Outlet

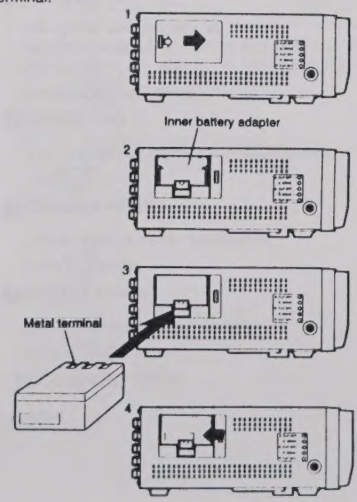
Follow the instructions below to provide the power supply to the unit from a domestic AC outlet.



1. Set the BATTERY CHARGE switch to "MONITOR".
2. Connect the provided power cord to the AC IN terminal, then connect the power plug to an AC outlet.

■Using an Inner Battery

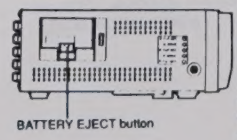
This unit operates with either of the two types of inner battery: JVC NB-G1U or flat-shaped nicad 12 V inner battery. To provide the power supply from an inner battery, it should be charged in advance by installing it in the unit. The batteries' usage duration is approx. 40 minutes.
Note:
When providing the power supply to the unit from the inner battery, do not connect the AC IN or DC IN 12 V terminal.



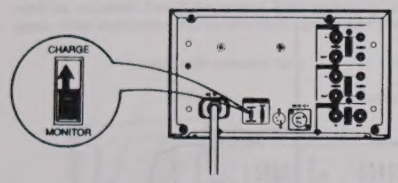
◆ **Installing and removing the inner battery**

1. Slide the battery compartment door in the direction of the arrow to open it.
2. Pull the inner battery adapter inside the battery compartment door toward you to remove it.
   * When using a flat-shaped nicad 12 V inner battery, do not remove the battery adapter.
3. Install the inner battery with the metal terminal section facing upwards. Insert the battery until it is securely locked (click is heard).
   IMPORTANT: Be careful NOT to forecefully install the inner battery with the metal terminals facing downwards as it cannot be removed.
4. Close the door.

When removing the inner battery, open the door and push down the BATTERY EJECT button. The battery is released, and then it can be removed.

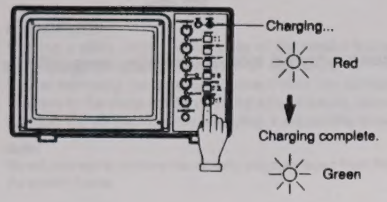


IMPORTANT:
To avoid the inner battery from hitting your finger, while pressing the BATTERY EJECT button, support the battery with your other hand.



◆ **Charging the inner battery**

1. Install the inner battery in the unit.
2. Connect the provided power cord to the AC IN terminal.
3. Set the BATTERY CHARGE switch to "CHARGE".
4. Set the POWER button to ON.
   The BATTERY CHARGE indicator lights to indicate when the unit begins charging.
   The BATTERY CHARGE indicator changes from red to green, indicating that charging is complete.
5. After charging is complete, set the POWER button to OFF and set the BATTERY CHARGE switch to "MONITOR".



CAUTIONS:

Regarding the inner battery

- The unit completes charging in approx. 15 hours. To avoid the inner battery from overcharging, reset the POWER button to OFF as soon as the BATTERY CHARGE indicator turns green.
- Be careful not to short-circuit the battery terminal by touching it with metal objects; it could be dangerous and damage the inner battery.
- Keep the terminals clean. If they become dirty, wipe with a cloth.
- Do NOT throw the inner battery into a fire or leave it in places with a hot temperature.

Battery attributes

- Even if a charged battery is left unused, its power will gradually discharge.
- Rechargeable batteries have a certain lifespan. (They cannot be used permanently.)
- If the battery is repeatedly charged without discharging the power, the battery lifetime may become shorter.
- Though a battery becomes warm during and just after charging, it is not a malfunction.

Allowable temperatures
In charge : +10°C to +35°C
In storage : −10°C to +30°C

- After a rechargeable battery has been stored and left unused for a long period of time, the recharging capacity may become less. However, repeated use will gradually restore this condition.

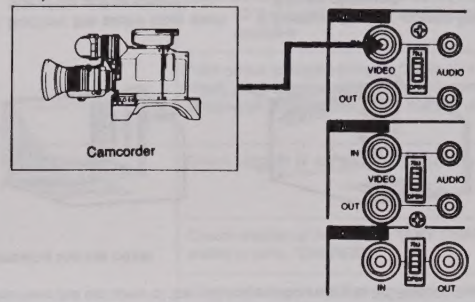
CONNECTING TO EXTERNAL EQUIPMENT

Notes:

- Be sure to disconnect the power plug from the power source before connecting to other equipment.
- Refer to the instruction manuals of the equipment to be connected.
- When using any of the OUT connectors (bridged output), set their termination switches to "OPEN".

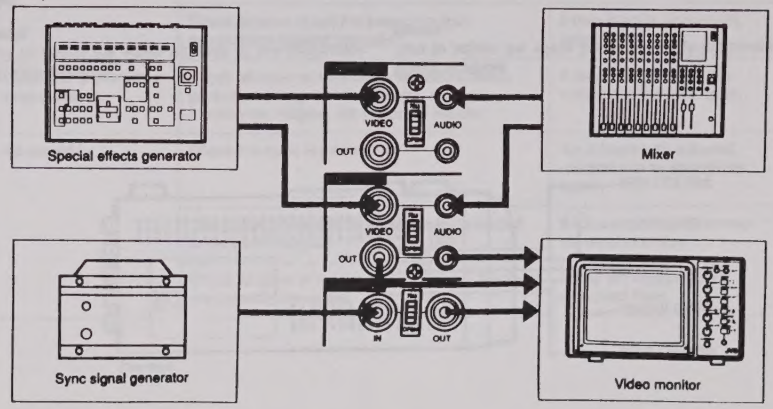
■ Basic Connections (When Using as a Monitor for ENG/EFP)

ex 1)



■ Systematic Connections (When Performing Editing with an External Sync and Bridged Connection)

ex 2)

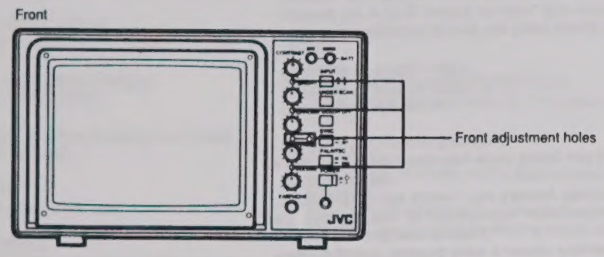


FOR SERVICE PERSONNEL

There are switches and controls for service personnel on and inside the right and left-side panels of the unit. Do NOT adjust them except in cases when adjustment is specially required.

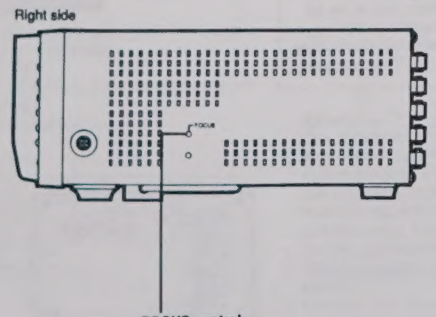
WARNINGS:
- The user must NEVER touch inside the unit because it is dangerous.
- Use an insulated screwdriver for adjustments.

■ Front Adjustment Holes (CONTRAST/BRIGHT/CHROMA/PHASE Subcontrols)



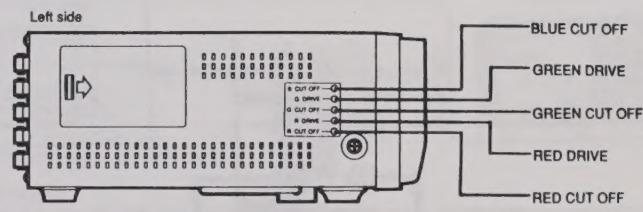
CAUTION: There are two CHROMA adjustment holes; the left one is for NTSC signals and right for PAL signals.

■ Right-Side Adjustment Hole (FOCUS Control)



FOCUS control
Turn to adjust the focus voltage.

■ Left-Side Adjustment Holes (CUT OFF/DRIVE Controls)



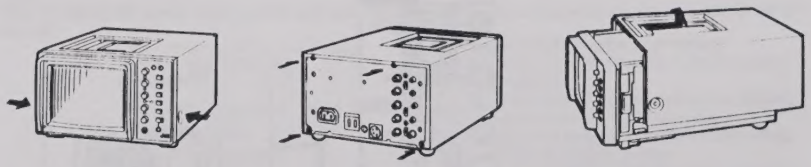
CUT OFF controls
Turn to adjust the white balance of low-luminance signals.

DRIVE controls
Turn to adjust the white balance of high-luminance signals.

Note:
Use an adjustment screwdriver to turn the screws in the adjustment holes. Turn left to decrease and turn right to increase.

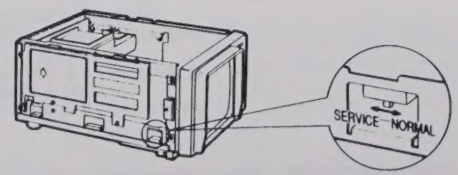
◆ The NORMAL/SERVICE switch required to adjust the CUT OFF controls of the white balance is inside the unit. Remove the top cover of the unit and set the switch to "SERVICE" if necessary.

Removing the top cover



1. Remove the screw from each side of the unit as shown.
2. Remove the four screws from the rear of the unit.
3. Remove the top cover by sliding it backward, then lifting it up.

Set the NORMAL/SERVICE switch



INSTALLING THE SCREEN HOOD

The provided screen hood is useful to make the monitor screen easier to view when the unit is used in bright places, such as outdoors. Install the screen hood by wrapping it around the screen frame using the velcro and adhesive tapes. After installation, the screen hood can be detached and attached as required.

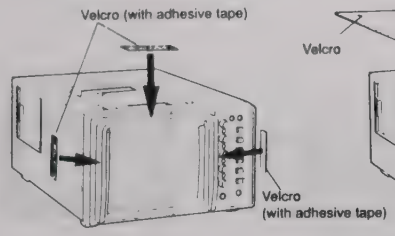


Fig. 1

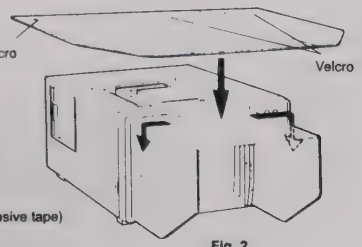


Fig. 2

◆ **Installation**

1. Using a cloth, clean the surfaces of the screen frame shown with the arrows, so that the adhesive tapes can be securely attached. (See Fig. 1.)
2. After removing the protective covers from the adhesive sides of the three pieces of velcro, attach each piece of velcro to the three sections on the screen frame, shown with the arrows. (See Fig. 1.)
3. Install the screen hood by wrapping it around the screen frame, as shown. (See Fig. 2.)

Note:
Do not attempt to remove the already attached tapes from the screen frame of the unit because it could result in discoloration of the screen frame.

CAUTIONS

- Only use the power source specified on the rating label located on the bottom of the cabinet.
- When not using this unit for a long period of time, or when cleaning it, be sure to disconnect the power plug from the AC outlet.
- Do not allow anything to rest on the power cord. And do not place this unit where people will tread on the cord.
- Do not overload wall outlets or power cords as this can result in a fire or electric shock.
- Avoid using this unit under the following conditions:
  - in extremely hot, cold or humid places,
  - in dusty places,
  - near appliances generating strong magnetic fields,
  - in places subject to direct sunlight,
  - in badly ventilated places.
- Do not cover the ventilation slots while in operation as this could obstruct the required ventilation flow.
- When dust accumulates on the screen surface, clean it with a soft cloth.
- Unplug this unit from the AC outlet and refer servicing to qualified service personnel under the following conditions:
  - when the power cord is frayed or the plug is damaged,
  - if liquid has been spilled into the unit,
  - if the unit has been dropped or the cabinet has been damaged,
  - when the unit exhibits a distinct change in performance.
- Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Always refer servicing to qualified service personnel.
- When replacement parts are required, have the service personnel verify in writing that the replacement parts he/she uses have the same safety characteristics as the original parts. Use of manufacturer's specified replacement parts can prevent fire, shock, or other hazards.
- Upon completion of any servicing or repair work to this unit, please ask the service personnel to perform the safety check described in the manufacturer's service literature.
- When this unit reaches the end of its useful life, improper disposal could result in a picture tube implosion. Ask qualified service personnel to dispose of this unit.
- If you do not use the unit for a long period of time, disconnect the power cord and remove the inner battery for battery-saving and safety purposes.

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BEFORE CALLING FOR SERVICE

- **Check the following items once more:**

Problems	Points to be checked	Measures
No power supply.	If a domestic AC power outlet is used, check the provided cable is properly connected to the unit and AC socket.	If the power cable is disconnected, reconnect it.
	If a battery is used, check the battery is charged. **Note:** When a plug is connected to the DC IN 12 V terminal, the inner battery is not operative.	If the battery is not charged, recharge it.
	If the power is supplied via the DC IN 12 V terminal, check that the power cable is properly connected. (If using an outer battery, check that it is charged.)	If the cable is disconnected, reconnect it. If the battery is not charged, recharge it.
No (or blurred) pictures.	Check whether or not the input is correctly selected.	If it is incorrectly selected, press the INPUT button until normal pictures are obtained.
	Check whether or not the BATTERY CHARGE switch is set to "CHARGE".	If it is set to "CHARGE", reset to "MONITOR".
	Check whether or not the rear video terminals are correctly connected.	If they are disconnected, reconnect them.
	Check whether or not the BRIGHT control is correctly adjusted.	If it is incorrectly adjusted, readjust the picture brightness.
	Check whether or not the external output components operate normally.	If they operate abnormally, repair them.
Abnormal pictures or wrong colors.	Check whether or not there is something which generates a magnetic field (motor, speaker, transformer, magnet, etc.) near the monitor.	If there is anything of this kind, move the units apart.
No sound.	Check the audio level control.	If it is incorrectly adjusted, readjust it to its appropriate level.
	Check whether or not the earphone is connected to the earphone jack.	If it is connected, disconnect the earphone plug.
	Check whether or not the rear audio input terminals are correctly connected.	If they are disconnected, reconnect them.

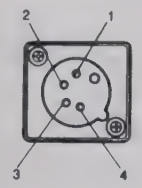
SPECIFICATIONS

Type	: Color video monitor
Color system	: NTSC/PAL system
CRT	: 6" (measured diagonally), 90° deflection, in-line gun, vertical pitch stripe phosphor of 0.42 mm
Audio output	: 0.5 W 8 Ω 10% THD
Speaker	: 3-1/8" round x 1
Screen size (H x V)	: 4-7/16" x 3-5/16"
Scanning frequency	: NTSC (H) 15.734 kHz, (V) 59.94 Hz PAL (H) 15.625 kHz, (V) 50 Hz
Horizontal resolution	: More than 250 lines
Power requirements	: AC 100 to 120 V, 50/60 Hz; DC 12 V
Power consumption	: AC 0.57 A, DC 2.7 A
Input A, B	: Video – BNC 1 V p-p, 75 ohms, negative sync Bridged connection is possible (A termination switch is provided) Audio – RCA pin connector 390 mV rms, high impedance Bridged connection is possible
EXT sync	: BNC 4 V p-p, 75 ohms, negative sync Bridged connection is possible (A termination switch is provided)
Weight	: 10.9 lbs (4.9 kg)
Accessories	: Power cord (approx 2.4 m) x 1 Screen hood x 1 Rear Guard x 1 set Inner battery adapter x 1

Design and specifications subject to change without notice.

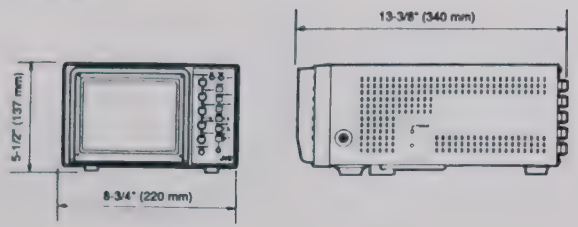
Pin Assignment

DC connector



Pin No.	Signal
1	GND
2	–
3	–
4	DC 12 V

Dimensions

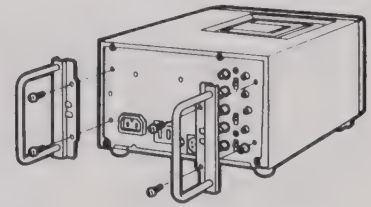


INSTALLING THE REAR GUARDS

The rear terminals and connection cables can be protected by installing the provided Rear Guards. Install them if necessary.

Installing the Rear Guards:
Install the two Rear Guards to the rear panel using the provided four screws, as shown.

CAUTION:
With the Rear Guards installed, do NOT stand the unit vertically (with the screen facing upwards). This could cause the unit to accidentally fall down.



MAIN PARTS LOCATION

■ Circuit board arrangement

The circuit boards and modules are composed as follows.

- ● DEF PB ASS'Y(FX-2015A)

[Atop DEF PB assembly]

- ● SIGNAL PB ASS'Y(FX-1044A)

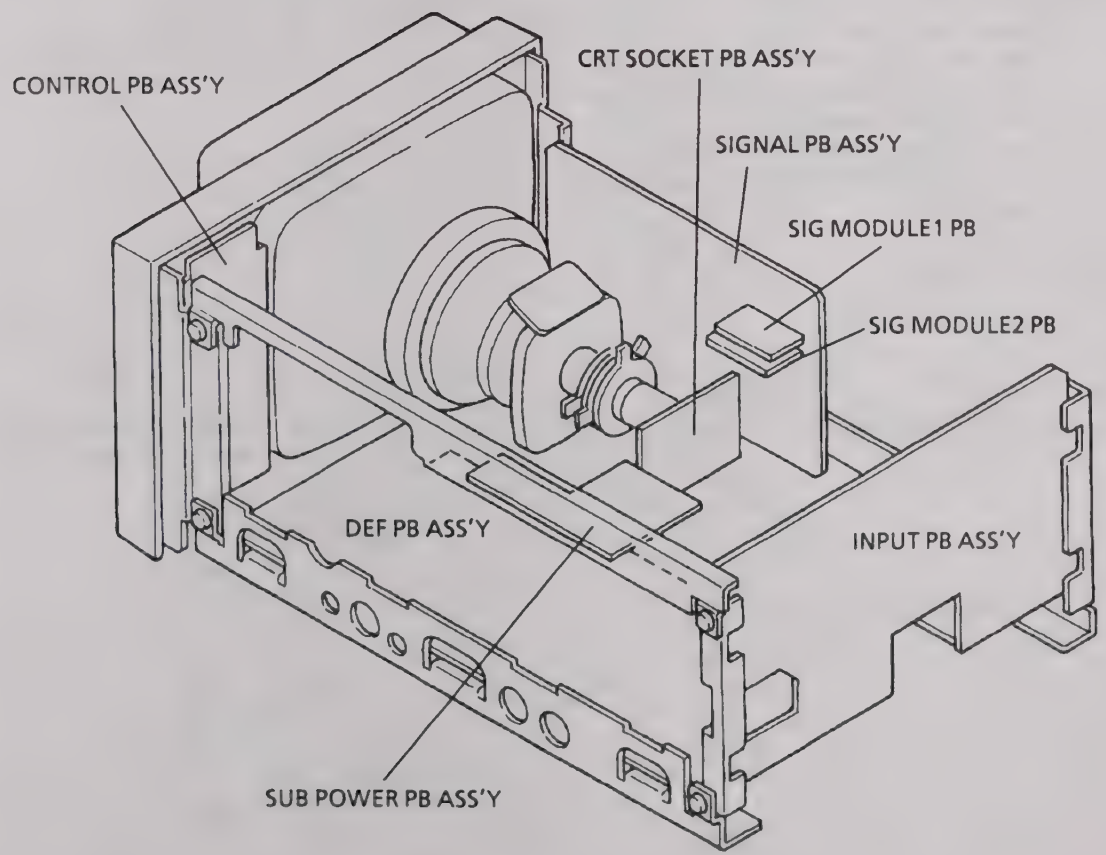
[Atop Signal PB assembly]

- ○ SIG MODULE1 PB(FX-M001A)
- ○ SIG MODULE2 PB(FX-M002A)
- ● CONTROL PB ASS'Y(FX-4021A)
- ● CRT SOCKET PB ASS'Y(FX-3022A)
- ● INPUT PB ASS'Y(FX-6026A)
- ● SUB POWER PB ASS'Y(FX-9032A)

Total: 6 boards, 2 modules

■ Factory settings

Contrast	Detent position
INPUT	A
UNDER SCAN	NORMAL
COLOR OFF	OFF
SYNC	INT
PAL/NTSC	NTSC
POWER	OFF
CONTRAST	Detent position
BRIGHT	〃
CHROMA	〃
PHASE	〃
VOLUME	Mechanical center
BATT.CHARGE SW	MONITOR
BATT.SAVE SW	OFF
Termination SW	75Ω



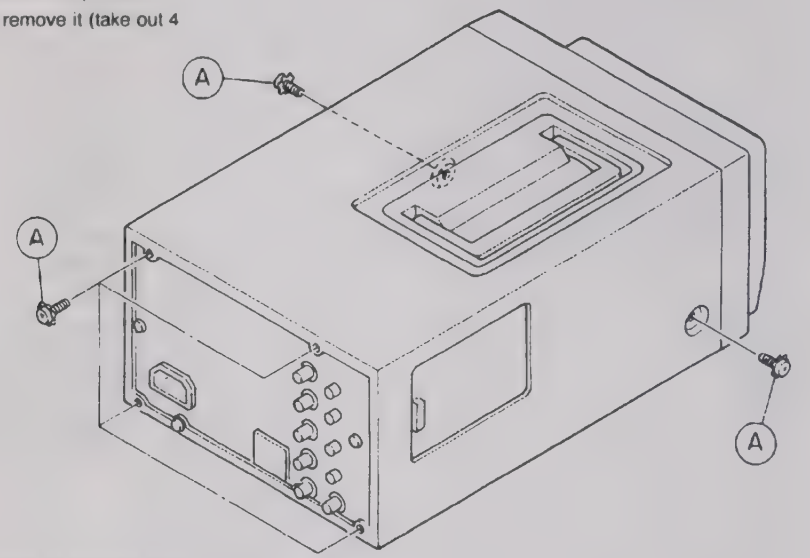
SPECIFIC SERVICE INSTRUCTIONS

■ External parts removal

● Top cover

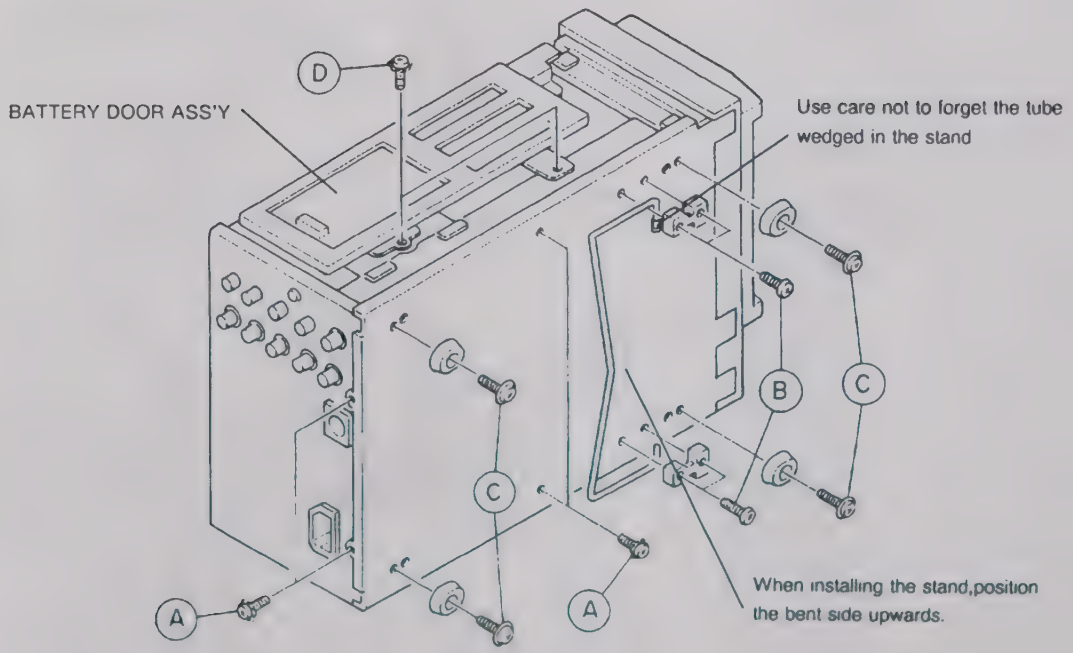
1. Take out 6 screws Ⓐ and remove the top cover.

※ If the Rear guard is affixed,first remove it (take out 4 screws).



● Bottom cover

1. Remove the top cover.
2. Take out 4 screws Ⓐ and 4 screws Ⓑ.Remove the bottom cover.The stand holder can be removed when the screws Ⓑ are taken out.
3. Take out 4 screws Ⓒ and remove the feet.
4. Take out 2 screws Ⓓ and remove the battery door assembly.



● Rear bracket

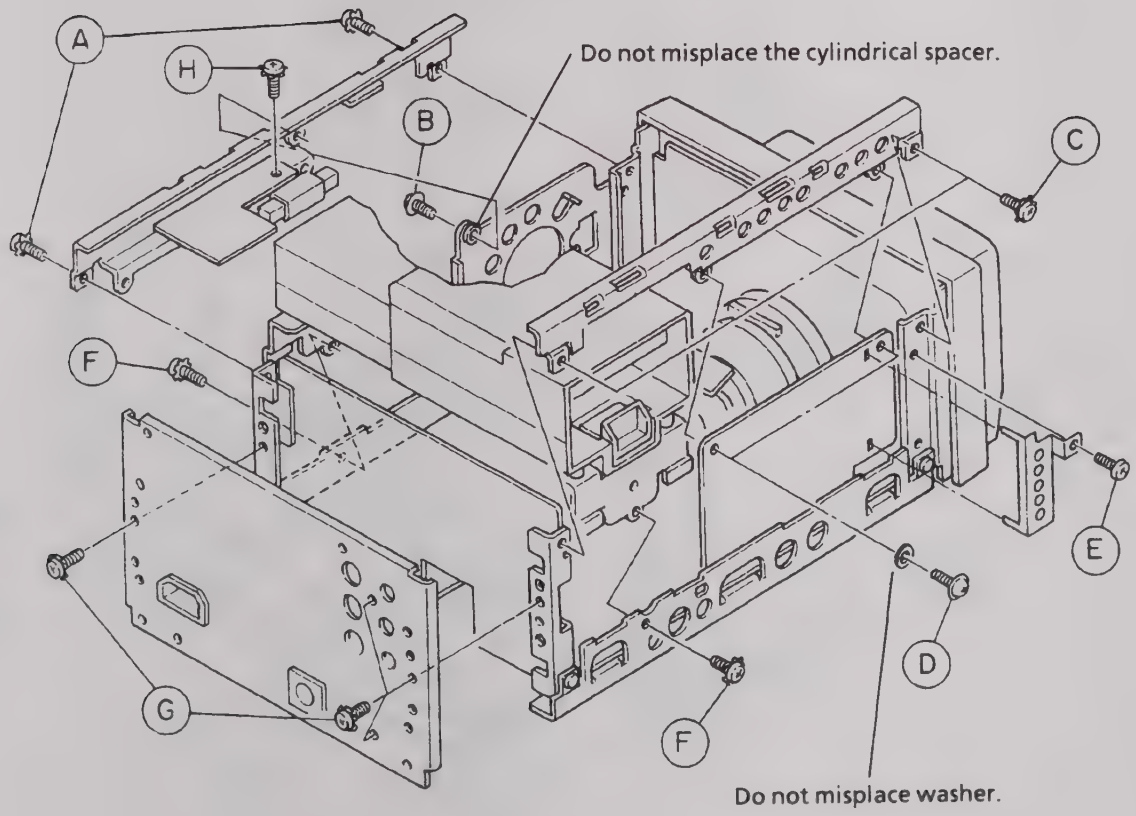
1. Remove the top cover.
2. Take out 2 screws Ⓐ and 1 screw Ⓑ.Remove the top beam (left side).
3. Take out 2 screws Ⓒ and 2 screws Ⓓ.Remove the top beam (right side).
4. Take out 1 screw Ⓔ and remove the PCB guard.
5. Take out 2 screws Ⓕ and remove the battery box.
6. Remove the bottom cover.
7. Take out 4 screws Ⓖ and remove the rear bracket.

● Sub-power PB assembly

1. Remove the top cover.
2. Take out 1 screw Ⓗ.Remove the resistor and sub-power PB assembly.

● Signal PB assembly

1. Remove the top cover,top beam,battery door ass'y and 2 screws Ⓔ of PCB guard.
2. The Signal PB assembly can then be removed.



●Input PB assembly

1. Remove the top cover, bottom cover and rear bracket.
2. Take out 2 screws Ⓐ and remove the input PB assembly.

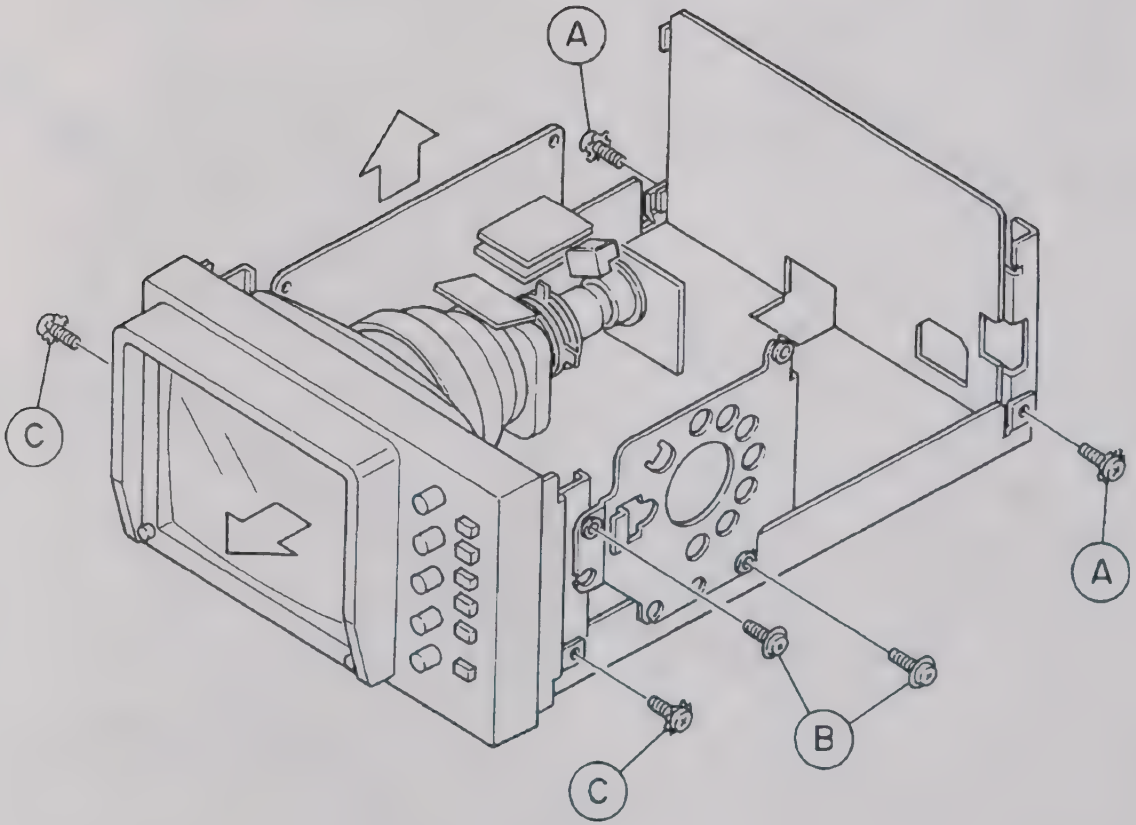
●Speaker

1. Remove the top cover and top beams.
2. Take out 2 screws Ⓑ and remove the speaker together with the speaker bracket.

※ When installing,use care not to damage the speaker cone.

●Front Panel

1. Remove the top cover, bottom cover and top beams.
2. Take out 2 screws Ⓒ and remove the front panel.



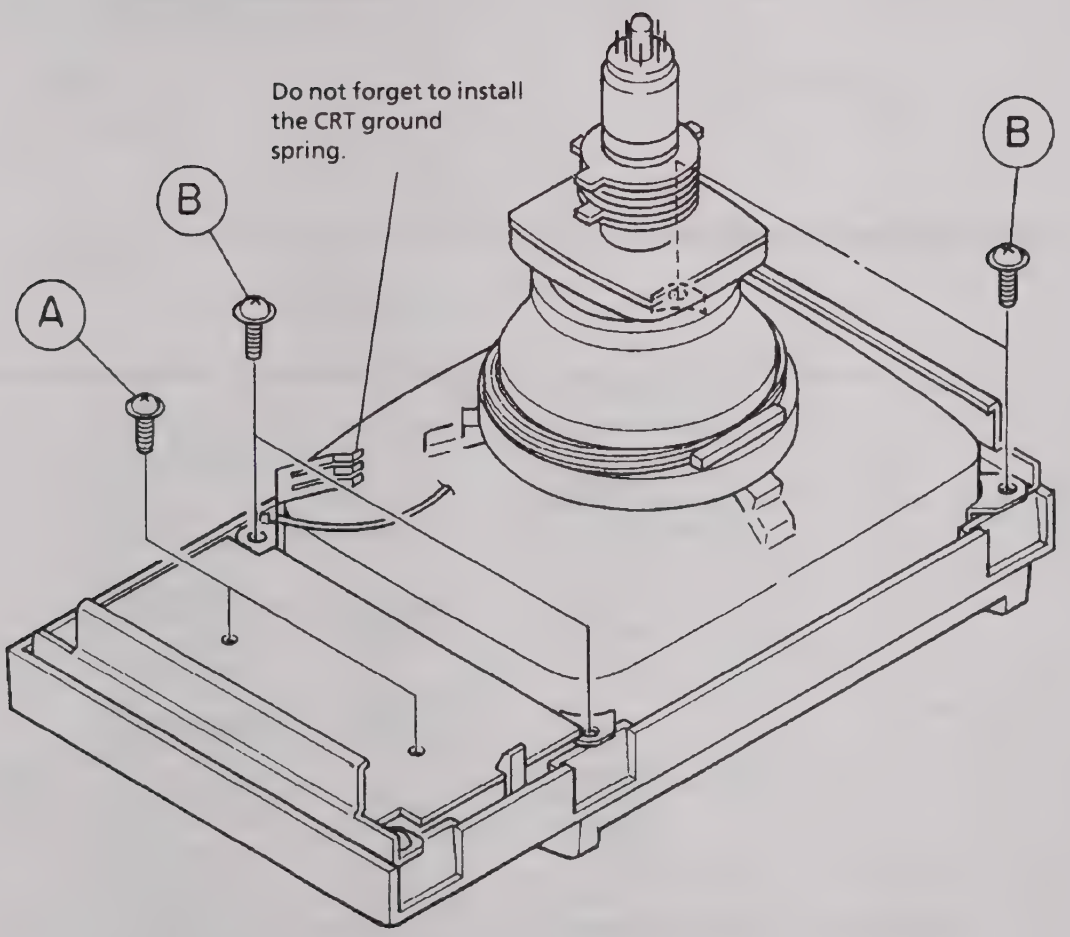
● Control PB assembly

1. Remove the front panel and front bracket.
2. Take out 2 screws Ⓐ and remove the control PB assembly.

● CRT

1. Remove the front panel and front bracket.
2. Take out 4 screws Ⓑ and remove the CRT.

※ Be cautious of picture inclination when installing the CRT.



SERVICE ADJUSTMENT

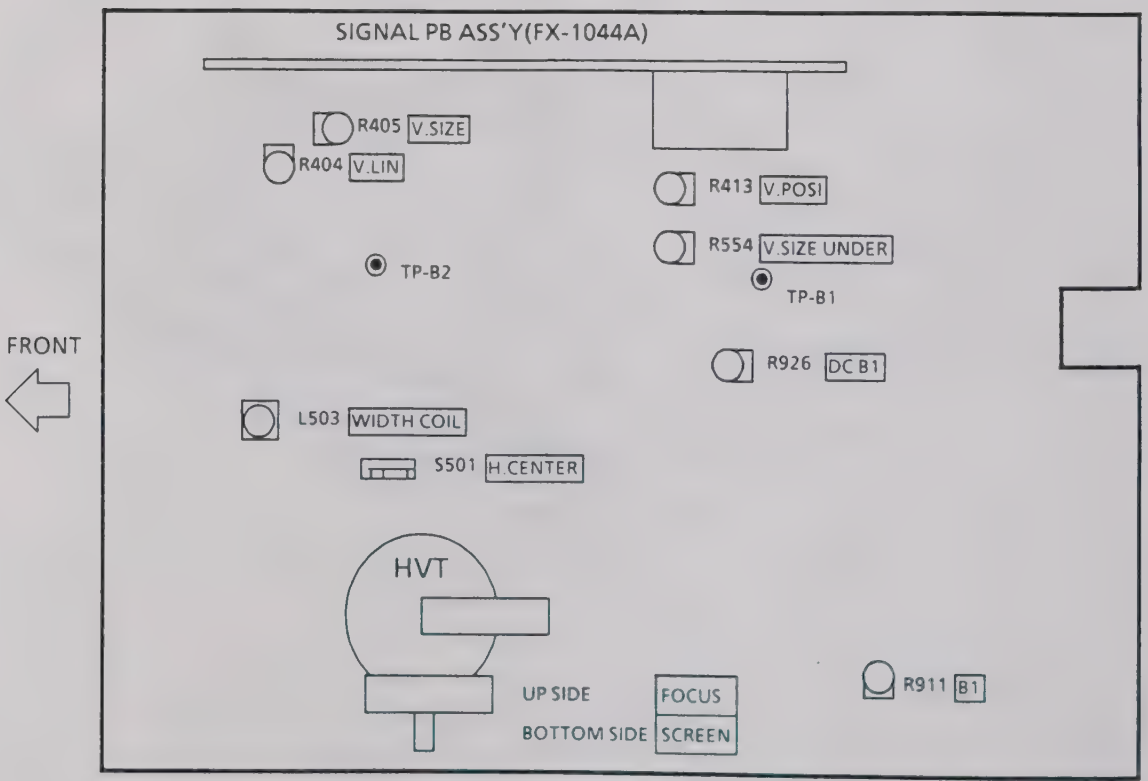
■ Preparation

1. Supply power and allow the set and test instruments to warm up and stabilize for at least 30 minutes before proceeding with adjustments.
2. Check that the power source is the correct AC voltage.
3. Use care not to disturb controls and switches other than those indicated in the adjustment procedure.
4. Set controls and switches used by the customer (brightness, tint, hue, vertical hold, etc.) to their factory positions (refer to the list of these settings).

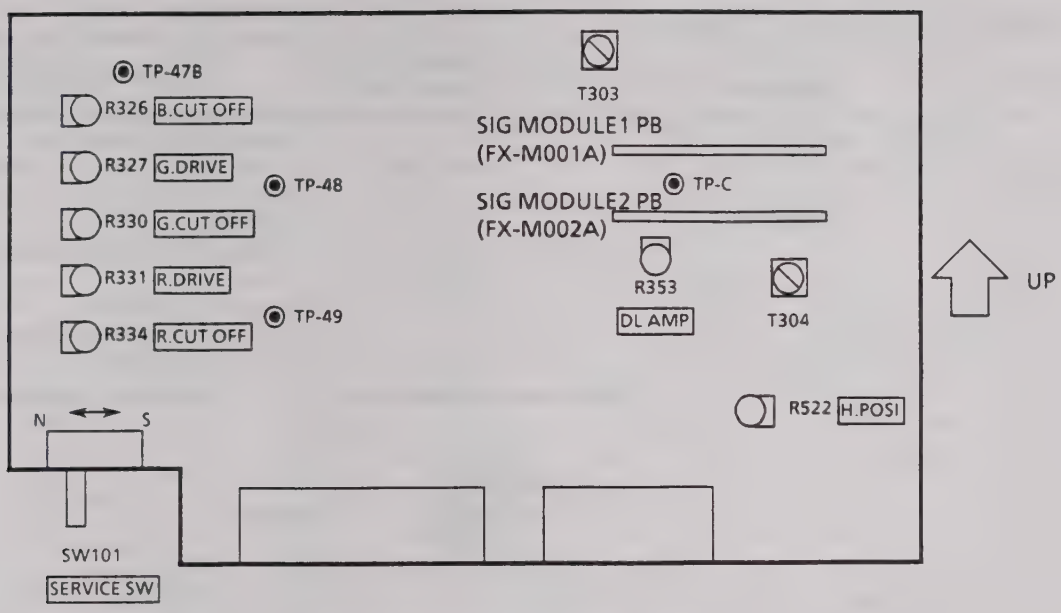
■ Test equipment list

- DC voltmeter (digital voltmeter)
- Oscilloscope
- Signal generator (NTSC/PAL systems)
  Color bar (NTSC/PAL)
  Split color bar (NTSC)
  Crosshatch (NTSC)
  White (NTSC)
  Black (NTSC)
  Mono scope(NTSC)(if available)
- Standard test pattern (NTSC)
- 12 V stabilized power supply(more than 3A)

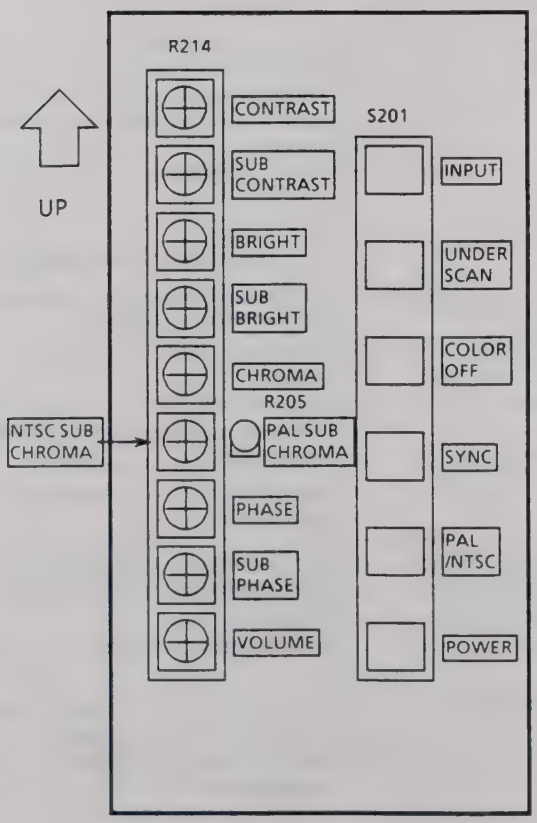
■ Adjustment locations



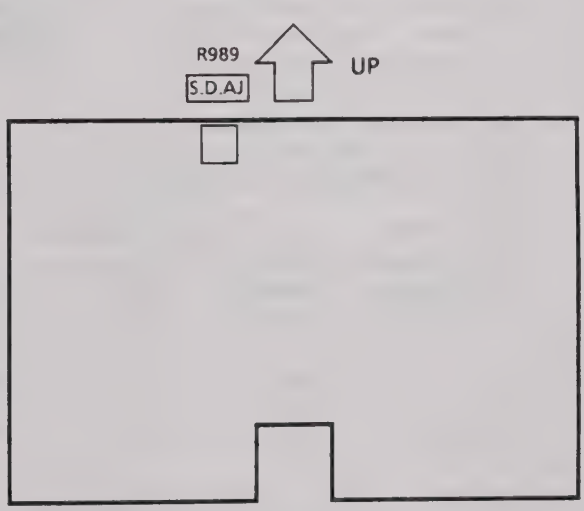
DEF PB ASS'Y(FX-2015A)



SIGNAL PB ASS'Y(FX-1044A)



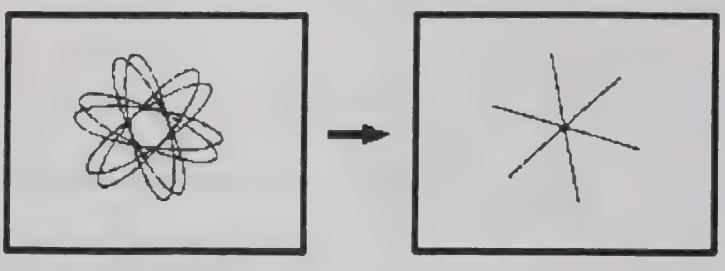
CONTROL PB ASS'Y(FX-4021A)



INPUT PB ASS'Y(FX-6026A)

■ Adjustment procedure

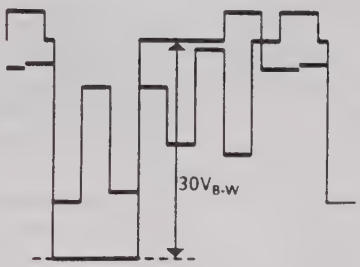
●Signal PB assembly (FX-1044A)

No.	Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
1.	PAL APC	Color bar signal (PAL) Oscilloscope	TP-48 TP-49	T304 R353(DL AMP)	1. Supply a color bar signal input. 2. Connect channel 1 of a dual-trace oscilloscope to TP-48 and channel 2 to TP-49.Set for XY coordinate mode. 3. Connect a 5.6KΩ resistor between IC101 pins 29 and 31. 4. Short both ends of C316. 5. Adjust T304 and R353 (DL AMP) to obtain the waveform shown in Fig.B.  (A) (B)
2.	Burst cleaning coil	Color bar signal (PAL) Oscilloscope	TP-C	T303	1. Supply a color bar signal input. 2. Connect oscilloscope TP-C 3. Adjust T303 for minimum output waveform amplitude.

●DEF PB assembly (FX-2015A)

No.	Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
1.	B1 voltage (AC)	Crosshatch (NTSC) Digital voltmeter	TP-B1	BRIGHT VR SUB BRIGHT VR [CONTROL PB ASS'Y] R911(B1)	1. Supply a crosshatch signal input. 2. Set the Bright and Sub Bright VRs to off positions. 3. Adjust R911 (B1) for 25 V ± 0.1 V at TP-B1. 4. Confirm near absence of voltage fluctuation even when the input signal is changed. 5. Return the Bright and Sub Bright VRs to their previous positions.
2.	B1 voltage (DC)	Crosshatch (NTSC) Digital voltmeter 12 V stabilized power supply (more than 3A)	TP-B1	BRIGHT VR SUB BRIGHT VR [CONTROL PB ASS'Y] R926(DC B1)	1. Supply a crosshatch signal input. 2. Set the Bright and Sub Bright VRs to off positions. 3. Adjust R926 (DC B1) for 25 V ± 0.1 V at TP-B1. 4. Confirm near absence of voltage fluctuation even when the input signal is changed. 5. Return the Bright and Sub Bright VRs to their previous positions.

● Control PB assembly (FX-4021A)

No.	Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
1.	Contrast standard setting	color bar (NTSC) Oscilloscope	TP-47B [SIGNAL PB ASS'Y]	SUB CONTRAST VR	1. Supply a split color bar signal input. 2. Set the Contrast and Bright VRs to their detent positions. 3. Connect oscilloscope to TP-47B. 4. Adjust the Sub Contrast VR to obtain 30 Vp-p from the black to the 100 % white waveform components. 
2.	Sub chroma and sub phase	Color bar (NTSC/PAL) Oscilloscope	TP-47B [SIGNAL PB ASS'Y]	NTSC SUB CHROMA VR SUB PHASE VR R205(PAL SUB CHROMA) PAL/NTSC SWITCH	1. Supply a NTSC color bar signal input. 2. Connect oscilloscope to TP-47B. 3. Adjust the Sub Phase VR to align the 2 and 3 waveform levels. 4. Adjust the NTSC Sub Chroma VR to align the 1 and 4 waveform levels. 5. Set the PAL/NTSC switch to PAL. 6. Supply a PAL color bar signal input. 7. Adjust R205 (PAL Sub Chroma) to align the 1 and 4 waveform levels. 8. Set the PAL/NTSC switch to NTSC.
3.	Sub Bright	Full black signal (NTSC)		SUB BRIGHT VR	1. Supply a full black signal input. 2. Check that the Contrast and Bright VRs are at their detent positions. 3. Set the Sub Bright VR to just before the position where the picture becomes light (do not set for excessive brightness).

● DEF PB assembly (FX-2015A)

No.	Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
1.	Horizontal gain and centering	Crosshatch (NTSC) (Mono scope)		R522 (H Pos) [SIGNAL PB ASS'Y] L503 (Width Coil) S101 (H Center) Underscan switch [CONTROL PB ASS'Y]	1. Supply a crosshatch signal input. 2. Adjust R522 (H Pos) to set the center of the crosshatch to the center of the picture. 3. Set the Underscan switch on and check for picture loss from the raster. 4. If there is loss, adjust S101 (H Center). 5. Set the Underscan switch to off and adjust L503 (Width Coil) for 95 %.
2.	Vertical gain and centering	Crosshatch (NTSC) (Mono scope)		R405 (V Size) R413 (V Pos) R404 (V Lin) R554 (V Size Under) Underscan switch [CONTROL PB ASS'Y]	1. Supply a crosshatch signal input. 2. With the Underscan switch off, adjust R405 (V Size) and R413 (V Pos) for 95 %. 3. Adjust R404 (V Lin) so the picture is symmetrical top and bottom. 4. With the Underscan switch on, adjust R554 (V Size Under) for square crosshatch shapes. 5. Operate the Underscan switch on/off and check that adjustment is stable.

● Signal PB assembly (FX-1044A)

No.	Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
1.	Low light white balance	Crosshatch signal (NTSC)		S101 (Service switch) R326 (B Cut Off) R330 (G Cut Off) R334 (R Cut Off) SCREEN VR (bottom of HVT)	1. Supply a crosshatch signal input. 2. Set the Service switch (S101) to S. 3. Turn R326 (B Cut Off), R330 (G Cut Off) and R334 (R Cut Off) to where color is not obtained. 4. Turn the Screen VR fully counterclockwise.Then slowly turn it clockwise and note the first color obtained. 5. Except for this color, turn the other color Cut Off VRs to produce white. 6. Set the Service switch (S101) to N.
2.	Highlight white balance	Full white signal (NTSC)		R331 (R Drive) R327 (G Drive) Contrast VR	1. Supply a full white signal input. 2. Adjust R331 (R Drive), R327 (G Drive) and Contrast VRs for optimum white color image.

● DEF PB assembly (FX-2015A)

No.	Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
1.	Focus	Crosshatch signal (NTSC)		Focus VR (top of HVT)	1. Supply a crosshatch signal input. 2. Turn the Focus VR to the position for optimum crosshatch focus and absence of moire.

● INPUT PB assembly (FX-6026A)

No.	Item	Test equipment	Test points	Adjustment locations	Adjustment procedure
1.	Shutoff voltage	Crosshatch (NTSC) Digital voltmeter 12 V stabilized power supply (more than 3A)		R989(S.D.AJ)	1. Supply a crosshatch signal input. 2. Turn R989(S.D.AJ) fully counter-clockwise. 3. Connect a digital voltmeter and stabilized power supply to the battery case + and - terminals. 4. Set the stabilized power supply for 10.6V. 5. Turn R989(S.D.AJ) and stop at the point the picture disappears. 6. Slightly raise the power supply voltage. 7. Cut off,then resupply power. Confirm startup.

PARTS LIST

CAUTION

- The parts marked ⚠ are very important for the safety. When replacing these parts, be sure to use specified ones to secure the safety and performance.
- The module circuit board is supplied together with the assembly, but the parts which do not have the drawing in this Parts List, P. W. Board Ass'y and the Parts No. columns of which are filled with lines —— . will not be supplied.
- As a rule, the resistors and capacitors which are indicated as shown in (NOTE 2) "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board.
  When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to (NOTE 2).

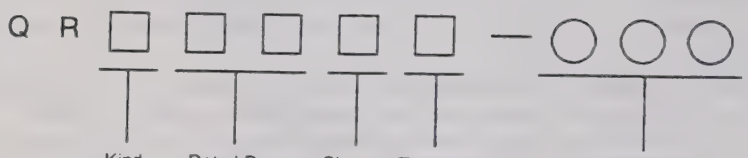
(NOTE 1) ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
± 1%	± 2%	± 5%	± 10%	± 20%	± 30%	+ 30% - 10%	+ 50% - 10%	+ 80% - 20%	+ 100% - 0%

(NOTE 2) HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



Symbol	Part Name
C	COMP.R
D	C R
S	CH MG R

Symbol	Rated Power
0 1	1 w
1 2	1/2 w
1 4	1/4 w
1 6	1/6 w
1 8	1/8 w

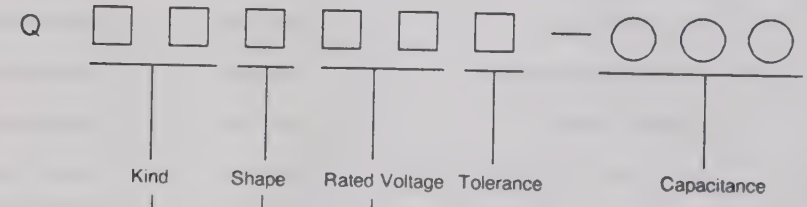
Symbol	Shape
1	Straight lead
8	Chip

Indicate with first two-figure expressed by Ω and following 0.
please note that,in case of resistance less than 10 Ω, a letter "R"will be effective as point.

EX.

2.2 Ω	=		2R2
470 Ω	=	47×10^{1} →	471
150kΩ	=	15×10^{4} →	154

■ CAPACITOR



Symbol	Part Name
CS	C CAP.
CS	CH C CAP.
ET	E CAP.
FM	M CAP.

6Figure \ 5Figure	0	1	2
A		10V	100V
C		16V	160V
D			200V
E		25V	250V
H		50V	500V
J	6.3V	63V	
V		35V	

Indicate with first two-figure expressed by pF and following 0.
Please note that,in case of capacitance less than 10 pF a letter "R" will be effective as point.

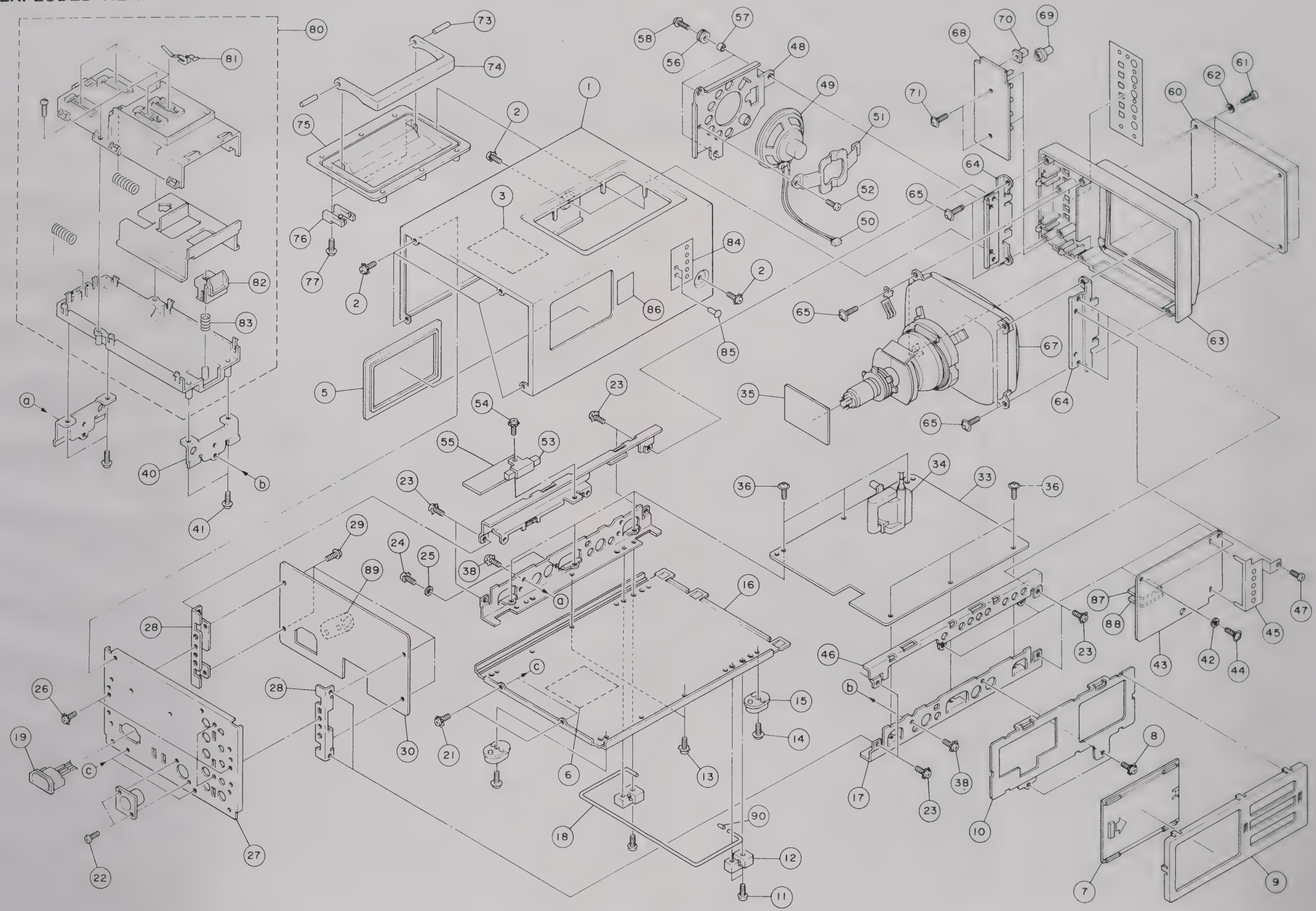
EX

5pF	=		5R0
1000pF	=	10×10^{2} →	102
47μF	=	47×10^{6} →	476

Symbol	Shape
1	Straight lead
1	Leads in the same direction
8	Chip
A	Leads in the same direction (compact part)

TM-550U

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description	Local
⚠	1	CM12393-A01	TOP COVER		
	2	CM44286-00F	ASSY SCREW	×6	
⚠	3	CM35884-A01	WARNING LABEL		
	5	CM35817-001	DOOR PANEL		
⚠	6	CM35675-001(R)	ROLL R LABEL		
	7	CM35734-A01	BATTERY DOOR		
	8	CM44286-00A	ASSY SCREW	×2	
	9	CM22629-001	DOOR COVER		
	10	CM35673-001	DOOR BASE		
	11	SPST4012M	SCREW	×4	
	12	CM47719-A01	STAND HOLDER	×2	
	13	CM44286-00F	ASSY SCREW	×2	
	14	GPST4010M	W TAP SCREW	×4	
	15	CM45764-002	FOOT	×4	
⚠	16	CM12392-002	BOTTOM COVER		
	17	CM35670-A01	BOTTOM BEAM	×2	
	18	CM35671-001	STAND		
⚠	19	QMCB004-001	AC INLET		
	21	CM44286-00F	ASSY SCREW	×2	
	22	SPST2606N	TH.TAP.SCREW	×2	
	23	CM44286-00A	ASSY SCREW	×8	
	24	CM44287-00B	ASSY SCREW		
	25	CM46603-001	T.LOCK WASHER		
	26	CM44286-00F	ASSY SCREW	×4	
	27	CM22692-00B	REAR BKT ASSY		
	28	CM47718-001	REAR CONNECT BKT	×2	
	29	GBSG3008Z	TAPPING SCREW	×4	
⚠	30	----------	INPUT PWB ASSY	FX-6026A	
⚠	33	----------	DEF PWB ASSY	FX-2015A	
⚠	34	CE42334-001	H.V.TRANSF.	T902	
⚠	35	----------	CRT SOCKET PWB	FX-3022A	
	36	GBSG3008Z	TAPPING SCREW	×6	
	38	CM44286-00A	ASSY SCREW	×2	
	40	CM47723-001	BATTERY BKT	×2	
	41	GBSF3010Z	TAPPING SCREW	×4	
	42	CM40574-011	WASHER	×2	
⚠	43	----------	SIGNAL PWB ASSY	FX-1044A	
	44	GBSG3008Z	TAPPING SCREW	×2	
	45	CM47897-001	PCB GUARD		
	46	CM35672-A01	TOP BEAM	×2	
	47	GBSG3008Z	TAPPING SCREW		
	48	CM35844-001	SP BKT		
⚠	49	77-52	SPEAKER		
	50	CHGS0003-0E-G	SPEAKER WIRE ASSY		
	51	CM43388-001	SPEAKER HOLDER		
	52	SDST3006Z	SCREW		
	53	QRF108K-270	UNF R	27 Ω 10W K	
	54	CM44286-00A	ASSY SCREW		
⚠	55	----------	SUB POWER PWB	FX-9032A	
	56	CM47873-001	RUBBER BUSH	×3	
	57	CM47900-001	SPACAER	×3	
	58	GPST3008Z	W TH.TAP SCREW	×3	
⚠	60	CM47840-001	PROTECT PANEL		
	61	BYS3010M	BOLT	×4	
	62	Q03093-826	WASHER	×4	
⚠	63	CM12395-00A-M0	FRONT PANEL ASSY		
	64	CM47724-001	PANEL BKT	×2	
	65	GBSF4012Z	TAP SCREW	×6	
⚠	67	A14JJD68X03	ITC TUBE	V01	
⚠	68	----------	CONTROL PWB ASSY	FX-4021A	
	69	CM47853-001	VOLUME KNOB	×5	
	70	CM46044-001	PUSH KNOB	×6	
	71	GBSF3010Z	TAPPING SCREW	×2	
	73	CM47847-001	PIN	×2	
⚠	74	CM35749-001	HANDLE		
⚠	75	CM12420-001	HANDLE BASE		
	76	CM40835-001	PIN HOLDER	×2	
	77	SBSF3010Z	TAPPING SCREW	×2	
⚠	80	CM12394-00A	BATTERY CASE ASSY		
	81	CM47728-001	BATTERY TERMINAL	×4	
	82	CM35735-A01	EJECT KNOB		
	83	CM46757-003	SPRING		
	84	CM47898-001	GUARD PLATE		
	85	CM47902-00B	RIVET ASSY		
⚠	86	CM47872-001	BATTERY CAUTION		
⚠	87	FX-M001A	SIG MODULE 1		
⚠	88	FX-M002A	SIG MODULE 2		
	89	CE41355-00B	CORE		
	90	CM47915-001	TUBE		

PRINTED WIRING BOARD PARTS LIST
SIGNAL PW BOARD ASS'Y(FX-1044A)

⚠	Symbol No.	Part No.	Part Name	Description	Local
	VARIABLE RESISTOR				
	R1326	QVPC802-502H	V R	5kΩ B	B.CUT OFF
	R1327	QVPC802-201H	V R	200 Ω B	G.DRIVE
	R1330	QVPC802-502H	V R	5kΩ B	G.CUT OFF
	R1331	QVPC802-201H	V R	200 Ω B	R.DRIVE
	R1334	QVPC802-502H	V R	5kΩ B	R.CUT OFF
	R1353	QVPC611-102HZ	V R	1kΩ B	DL AMP
	R1522	QVPC611-503HZ	V R	50kΩ B	H.POSI
	RESISTOR				
	R1335-37	QRG019J-123S	OM R	12kΩ 1W	J
	CAPACITOR				
	C1106	QEN61HM-474Z	BP E CAP.	0.47μF 50V	M
	C1312	QFV71HJ-474MZ	TF CAP.	0.47μF 50V	J
	C1313	QEN61HM-474Z	BP E CAP.	0.47μF 50V	M
	C1314	QFV71HJ-104MZ	TF CAP.	0.1μF 50V	J
	C1315	QFV71HJ-334MZ	TF CAP.	0.33μF 50V	J
	C1316	QEN61HM-475Z	BP E CAP.	4.7μF 50V	M
	C1317	QFLC1HJ-392MZ	M CAP.	3900pF 50V	J
	C1502	QFLC1HJ-332MZ	M CAP.	3300pF 50V	J
	C1508	QFLC1HJ-822MZ	M CAP.	8200pF 50V	J
	C1509	QFLC1HJ-103MZ	MYLAR CAP.	0.01μF	
	TRANSFORMER				
	T1303	CELT016-006	CLOCK TRANSF.		
	T1304	CE40396-A01	DL P.TRANSF.		
	COIL				
	L1301-03	CELP026-221Z	PEAKING COIL	220μH	
	L1304-06	CELP026-151Z	PEAKING COIL	150μH	
	L1307	CELP026-8R2Z	PEAKING COIL	8.2μH	
	DIODE				
	D1109-10	1SS133-T2	SI.DIODE		
	D1303-05	1SS133-T2	SI.DIODE		
	D1501	RD6.8ES(B2)-T2	ZENER DIODE		
	D1503	RD5.1ES(B3)-T2	ZENER DIODE		
	DL1101	CE40714-001	DELAY LINE		
	TRANSISTOR				
	Q1103	2SA933S(QR)-T	SI.TRANSISTOR		
	Q1105	2SC1740S(QR)-T	SI.TRANSISTOR		
	Q1302	DTC144WS-T	DIDI.TRANSISTOR		
	Q1303-05	2SC3187-T	SI.TRANSISTOR		
	Q1401	DTC144WS-T	DIDI.TRANSISTOR		
	Q1501	DTC144WS-T	DIDI.TRANSISTOR		
	IC				
	IC1101	M51413ASP	I.C(MONO-ANA)		
	OTHERS				
	DL1301	CE41305-001	DELAY LINE(1H)		
	SW1101	QSS1F22-C09	SLIDE SWITCH	SERVICE SW	
	X1301	CE41092-00A	CRYSTAL		
	X1302	CE41115-001	CRYSTAL		
	X1501	CSB500F9	CER.RESONATOR		

DEF PW BOARD ASS'Y(FX-2015A)

⚠	Symbol No.	Part No.	Part Name	Description	Local
		VARIABLE RESISTOR			
	R2404	QVPC611-102HZ	V R	1kΩ B V.LIN	
	R2405	QVPC611-102HZ	V R	1kΩ B V.SIZE	
	R2413	QVPC611-203HZ	V R	20kΩ B V.POSI	
	R2554	QVPC611-502HZ	V R	5kΩ B V.SIZE UNDE	
	R2911	QVPC623-102HZ	TRIM R	1kΩ B B1	
	R2926	QVPC611-102HZ	V R	1kΩ B DC B1	
		RESISTOR			
	R1605	QRG029J-330A	OM R	33 Ω 2W	J
	R2406	QRD123J-4R7SX	C R	4.7 Ω 1/2W	J
	R2410	QRG02CJ-121AX	OM R	120 Ω 2W	J
	R2414	QRD123J-121SX	C R	120 Ω 1/2W	J
	R2532	QRG029J-101A	OM R	100 Ω 2W	J
	R2534	QRG029J-121	OM R	120 Ω 2W	J
	R2535	QRD123J-391SX	C R	390 Ω 1/2W	J
	R2539	QRG029J-221A	OM R	220 Ω 2W	J
⚠	R2544	QRZ0054-2R2M	F R	2.2 Ω 1/4W	J
⚠	R2545	QRZ0054-2R2M	F R	2.2 Ω 1/4W	J
⚠	R2546	QRZ0054-2R2M	F R	2.2 Ω 1/4W	J
	R2553	QRG029J-102A	OM R	1kΩ 2W	J
⚠	R2556	QRZ0054-2R2M	F R	2.2 Ω 1/4W	J
	R2901	QRC121K-105Z	COMP.R	1MΩ 1/2W	K
	R2902	QRD123J-152SX	C R	1.5kΩ 1/2W	J
	R2903	QRF074K-3R9	UNF R	3.9 Ω 7W	K
	R2904	QRZ0069-472	UNF R	4.7kΩ 5W	K
	R2908	QRG039J-473A	OM R	47kΩ 3W	J
	R2909	QRM055K-R22	MP R	0.22 Ω 5W	K
	R2912	QRD123J-392SX	C R	3.9kΩ 1/2W	J
	R2913	QRD123J-222SX	C R	2.2kΩ 1/2W	J
	R2916	QRD123J-330SX	C R	33 Ω 1/2W	J
⚠	R2936	QRV141F-1002AY	MF R	10kΩ 1/4W	F
	R2943	QRG02CJ-152AX	OM R	1.5kΩ 2W	J
		CAPACITOR			
	C1604-05	QFV71HJ-104MZ	TF CAP.	0.1μF 50V	J
⚠	C1607	QCF31HP-222AZ	CH C CAP.	2200pF 50V	P
	C2408	QEHC1HM-107MZ	E CAP.	100μF 50V	M
	C2409	QFLC1HJ-103MZ	M CAP.	0.01μF 50V	J
	C2411	QEHC0JM-108MZ	E CAP.	1000μF 6.3V	M
	C2520	QFLC1HJ-472MZ	M CAP.	4700pF 50V	J
⚠	C2521	QFP42JJ-682M	PP CAP.	6800pF 630V	J
	C2522	QFP32GJ-563M	PP CAP.	0.056μF 400V	J
	C2523	QEHC1HM-105MZ	E CAP.	1μF 50V	M
	C2524	QEHC1CM-108MZ	E CAP.	1000μF 16V	M
	C2525	QEHC2CM-106MZ	E CAP.	10μF 160V	M
	C2526	QEHC2CM-336MZ	E CAP.	33μF 160V	M
	C2527	QFLC1HJ-224MZ	M CAP.	0.22μF 50V	J
	C2528	QFK62AJ-105M	MM CAP.	1μF 100V	J
	C2529	QEHC1HM-106MZ	E CAP.	10μF 50V	M
	C2530	QEHC1HM-226MZ	E CAP.	22μF 50V	M
	C2531	QEM51CM-108M	E CAP.	1000μF 16V	M
	C2532	QFK52AJ-475M	MM CAP.	4.7μF 100V	J
	C2534	QFLC1HJ-392MZ	M CAP.	3900pF 50V	J
	C2610	QFLC1HJ-103MZ	M CAP.	0.01μF 50V	J
⚠	C2901	QCZ9033-472A	C CAP.	4700pFAC125V	M
⚠	C2902	QCZ9058-222MZ	C CAP.	2200pF	
⚠	C2903	QCZ9058-102MZ	C CAP.	1000pF	
⚠	C2904	QCZ9058-222MZ	C CAP.	2200pF	
⚠	C2905	QFZ9036-224M	MF CAP.	0.22μFAC250V	M
⚠	C2906	QFZ9036-224M	MF CAP.	0.22μFAC125V	M
	C2907	QEZ0084-227M	E CAP.	220μF 400V	M
	C2910	QEHC1EM-227MZ	E CAP.	220μF 25V	M
	C2911	QEHC1HM-227MZ	E CAP.	220μF 50V	M
	C2912	QEHC1VM-108MZ	E CAP.	1000μF 35V	M
	C2915	QEHC1VM-108MZ	E CAP.	1000μF 35V	M
	C2916	QFLC1HK-222MZ	M CAP.	2200pF 50V	K

⚠ Symbol No.	Part No.	Part Name	Description	Local
CAPACITOR				
C2918	QFLC1HK-152MZ	M CAP.	1500 p F 50V	K
C2920	QFLC1HJ-104MZ	M CAP.	0.1 μ F 50V	J
C2921	QEN61HM-475Z	BP E CAP.	4.7 μ F 50V	M
C2923	QFLC1HJ-683MZ	M CAP.	0.068 μ F 50V	J
C2925	QFLC1HJ-224MZ	M CAP.	0.22 μ F 50V	J
C2928	QEHC1VM-477MZ	E CAP.	470 μ F 35V	M
C2929	QFLC1HJ-104MZ	M CAP.	0.1 μ F 50V	J
⚠ C2930	QCZ9033-472A	C CAP.	4700 p F AC125V	M
C2931	QEHC1VM-108MZ	E CAP.	1000 μ F 35V	M
C2932	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C2933	QFLC1HJ-222MZ	M CAP.	2200 p F 50V	J
C2950	QEHB1VM-108M	E CAP.	1000 μ F 35V	M
C2951	QEHC1CM-108MZ	E CAP.	1000 μ F 16V	M
C2952	QFLC1HJ-224MZ	M CAP.	0.22 μ F 50V	J
TRANSFORMER				
⚠ T2501	A76568-MA	H.DRIVE TRANSF.		
T2502	CE42394-001	SIDE PIN TRANS		
⚠ T2901	CE42332-001	SWITCH.TRANSF.		
COIL				
L2502	CELC047-300	CHOKE COIL	30 μ H	
L2503	CE41197-00E	WIDTH COIL		
L2504	CELL008-001	LINIARITY COIL		
L2505	CJ30030-056	HEATER CHOKE		
L2901	CE30001-420	HEATER CHOKE	42 μ H	
L2902	CELC039-181	CHOKE COIL	180 μ H	
L2903	CE40037-1R0	CHOKE COIL		
DIODE				
D2401-02	1SR35-400A-HJ	SI.DIODE		
D2505-09	1SR124-400A-HJ	SI.DIODE		
D2510	RD10ES(B3)-T2	ZENER DIODE		
D2511	1N4003-T3	SI.DIODE		
D2512	1SR35-400A-HJ	SI.DIODE		
D2513	1N4003-T2	SI.DIODE		
D2514	1SS133-T2	SI.DIODE		
D2515	1SR124-400A-HJ	SI.DIODE		
D2516-17	1SS133-T2	SI.DIODE		
D2519	RD11ES(B3)-T2	ZENER DIODE		
D2520	1SS133-T2	SI.DIODE		
D2901	LB-156-C1	BRIDGE DIODE		
D2902	RD13ES(B3)-T2	ZENER DIODE		
D2903-04	1SS81-T5	SI.DIODE		
D2905	RG2A-LFB1	SI.DIODE		
D2906	EG1Z-T3	SI.DIODE		
D2907	FML-G12S	SI.DIODE		
D2908-09	1SS133-T2	SI.DIODE		
D2910	RD20ES(B3)-T2	ZENER DIODE		
D2911	1SS133-T2	SI.DIODE		
D2912	RD6.2ES(B2)-T2	ZENER DIODE		
D2913	RD20ES(B3)-T2	ZENER DIODE		
D2914	1SS81-T5	SI.DIODE		
D2915-16	1SS133-T2	SI.DIODE		
D2917	FMB-24L	SHOTKEY DIODE		
D2918	RD8.2ES(B2)-T2	ZENER DIODE		
D2919	RD16E(B3)-T2	ZENER DIODE		
D2920	EG1Z	SI.DIODE		
TRANSISTOR				
Q2501	2SC1627A(Y)-T	SI.TRANSISTOR		
Q2502	2SC4478-YA	POWER TRANSISTOR		
Q2503	2SK1895-YA	POWER MOS FET		
Q2504	2SC1472K(AB)	SI.TRANSISTOR		
Q2505	2SC3390(C)-T	SI.TRANSISTOR		
Q2506	2SC2482(C1)-T	SI.TRANSISTOR		
Q2901	2SD1409	SI.TRANSISTOR		

⚠ Symbol No.	Part No.	Part Name	Description	Local
TRANSISTOR				
Q2902	2SK1118	POWER MOS FET		
Q2903-04	2SC1959(Y)-T	SI.TRANSISTOR		
Q2905	2SA562TM(Y)-T	SI.TRANSISTOR		
Q2906	2SK1895-YA	POWER MOS FET		
Q2907	2SC1959(Y)-T	SI.TRANSISTOR		
Q2908	2SC2235(OY)	SI.TRANSISTOR		
Q2909	2SJ189	F.E.T.		
Q2920	2SC3327(AB)-T	SI TRANSISTOR		
I C				
IC2401	LA7830	I.C.(MONO-ANA)		
IC2601	AN5265	I.C.		
IC2901	MB3769AP	I.C.(MONO-ANA)		
IC2902	UPC4559C	I.C.(MONO-ANA)		
IC2903	AN78L05-Y	I.C.		
IC2904	LM2940CT-12	I.C.(MONO-ANA)		
OTHERS				
⚠ F2901	QMF51U2-1R0S	FUSE	1.0A	
⚠ LF2901	CE41094-00A	LINE FILTER		
⚠ PC2901	CNY17F-C1	I.C.(PH.COUPLER)		
S2501	QSL4A13-C03Z	LEVER SWITCH	H.CENTER	
VA2901	ERZ-C10DK621U	ZINC N RESISTOR		

CRT SOCKET BOARD ASS'Y(FX-3022A)

⚠ Symbol No.	Part No.	Part Name	Description	Local
	CAPACITOR			
C3335	QFH63BK-223M	MM CAP.	0.022μF 1250V K	
	OTHERS			
⚠	CE40541-00A	CRT SOCKET		
⚠	CE40541-001	SOCKET COVER		

CONTROL PW BOARD ASS'Y(FX-4021A)

⚠ Symbol No.	Part No.	Part Name	Description	Local
	VARIABLE RESISTOR			
R4205	QVAZ010-C003A	TRIM R	NTSC SUB CHROMA etc	
R4214	QVPC611-503HZ	V R	50kΩ B CONTRAST,BRIGHT,etc,	
	RESISTOR			
R4202	QRD161J-101Y	C R	100 Ω 1/6W J	
	COIL			
L4201-02	CELP026-5R6Z	PEAKING COIL	5.6μH	
	DIODE			
D4201-03	SML1216W	L.E.D.		
D4204-07	1SS133-T2	SI.DIODE		
	TRANSISTOR			
Q4201-02	DTC124ES-T	DIGI.TRANSISTOR		
Q4203	2SA562TM(Y)-T	SI.TRANSISTOR		
	OTHERS			
J4201	QMS3008-C01	3.5 JACK		
SW4201	QSTL635-C01	PUSH SWITCH	INPUT,UNDER SCAN etc	

INPUT PW BOARD ASS'Y(FX-6026A)

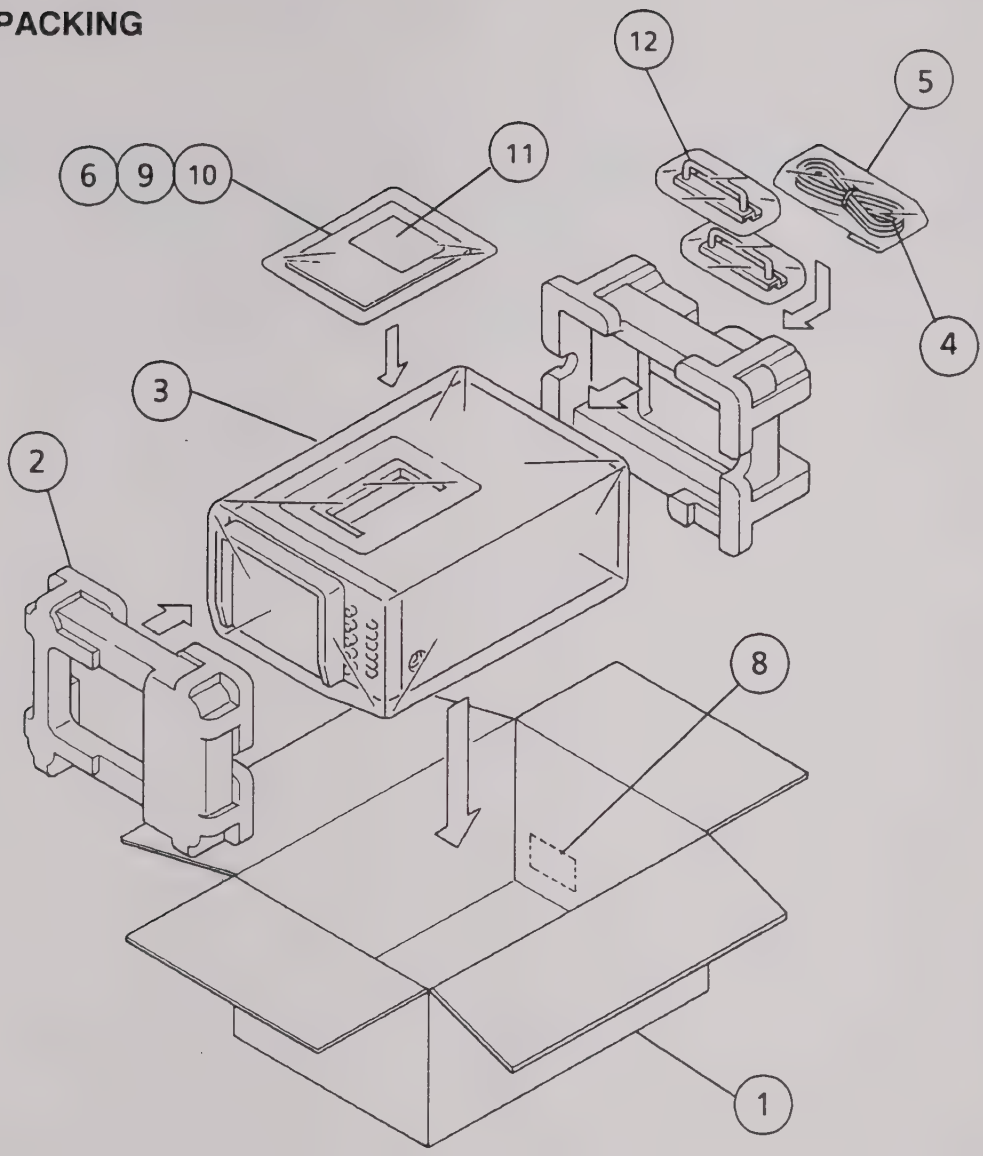
⚠ Symbol No.	Part No.	Part Name	Description	Local
	VARIABLE RESISTOR			
R6989	QVPC623-203HZ	TRIM RESISTOR	22kΩ B S.D.AJ	
	CAPACITOR			
C6120-22	QEKC1HM-335GMZ	E CAP.	3.3μF 50V M	
C6128	QFV71HJ-104MZ	TF CAP.	0.1μF 50V J	
C6129	QEKC1CM-107MZ	E CAP.	100μF 16V M	
C6612-13	QEKC1HM-105GMZ	E CAP.	1μF 50V M	
C6618	QFV71HJ-104MZ	TF CAP.	0.1μF 50V J	
C6619	QEKC1CM-107MZ	E CAP.	100μF 16V M	
C6935	QEKC1HM-105GMZ	E CAP.	1μF 50V M	
C6936	QFV71HJ-104MZ	TF CAP.	0.1μF 50V J	
C6937	QEP61HM-224GMZ	BP E CAP.	0.22μF 50V M	
C6938	QEKC1EM-106GMZ	E CAP.	10μF 25V M	
C6939	QEHC1CM-107MZ	E CAP.	100μF 16V M	
	DIODE			
D6110-16	1SS133-T2	SI.DIODE		
D6909	1N4003-T3	SI.DIODE		
D6910	RD13ES(B3)-T2	ZENER DIODE		
D6925-28	1SS133-T2	SI.DIODE		
D6929-30	RD5.1ES(B3)-T2	ZENER DIODE		
D6931	1N4003-T3	SI.DIODE		
D6932-33	1SS133-T2	SI.DIODE		
D6934	RD18ES(B2)-T2	ZENER DIODE		

⚠ Symbol No.	Part No.	Part Name	Description	Local
D I O D E				
D6935-36	1SS133-T2	SI.DIODE		
D6940	RD3.6ES(B1)-T2	ZENER DIODE		
D6941-44	1SS133-T2	SI.DIODE		
D6946	RD12ES(B3)-T2	ZENER DIODE		
D6947	1SS133-T2	SI.DIODE		
T R A N S I S T O R				
Q2923	2SA562TM(Y)-T	SI.TRANSISTOR		
Q6104-06	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6107-08	DTC144WS-T	DIDI.TRANSISTOR		
Q6109-11	2SC1740S(QR)-T	SI.TRANSISTOR		
Q6601-02	2SC1740S(R)-T	SI.TRANSISTOR		
Q6603	DTC144WS-T	DIDI.TRANSISTOR		
Q6908	DTC144ES-T	DIGI TRANSISTOR		
Q6910	2SJ189	F.E.T.		
Q6911	2SC1959(Y)-T	SI.TRANSISTOR		
Q6912	2SA562TM(Y)-T	SI.TRANSISTOR		
Q6913	DTC114ES-T	DIGI.TRANSISTOR		
Q6914-15	2SA562TM(Y)-T	SI.TRANSISTOR		
Q6916-18	2SC1959(Y)-T	SI.TRANSISTOR		
Q6920	2SJ189	F.E.T.		
Q6922	2SA562TM(Y)-T	SI.TRANSISTOR		
I C				
IC6102	TC4066BP	I.C.(DIGI-MOS)		
IC6602	TC4066BP	I.C.(DIGI-MOS)		
IC6904	UPC358C	I.C.(MONO-ANA)		
IC6906	UPC358C	I.C.(MONO-ANA)		
O T H E R S				
⚠ F6902	QMF51U1-4R0S	FUSE	4.0A	
S6101	QSS4C22-C02	SLIDE SWITCH	TERMINATION SW	
S6102-03	QSS4C22-C02	SLIDE SWITCH	〃	
SW6902	QSS4C22-C02	SLIDE SWITCH	BATTERY CHARGE	
SW6903	QSS4C22-C02	SLIDE SWITCH	BATTERY SAVE	

SUB POWER PW BOARD ASS'Y(FX-9032A)

⚠ Symbol No.	Part No.	Part Name	Description	Local
D I O D E				
D9960-65	RK44-LFJ8	S B DIODE		

PACKING



PACKING PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description	Local
	1	CP11224-B01	PACKING CASE		
	2	CP11223-A0A	CUSHION ASSY		
	3	AP3279-018	POLY COVER		
⚠	4	QMP1110-244K	POWER CORD		
	5	QPGA015-03005	POLY BAG		
⚠	6	TM-550U-IB-A	INST BOOK		
⚠	8	CM21428-00A	REC KEEPING CARD		
	9	BT-20109A	WARRANTY CARD		
	10	BT-20104A	SERVICE INF CARD		
	11	CM12499-00A	HOOD ASSY		
	12	MS-9915	REAR GUARD SA	×2	

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